

## CLAIMS

WE CLAIM:

1. An excavating apparatus having a prime mover with a longitudinal centerline and comprising a main frame (30) with an engine, a ground drive system and an excavation boom operatively attached thereto, said excavation boom comprising:

a sub-frame (112) having a first end and a second end, said first end of said sub-frame (112) being operatively pivotally attached to said main frame (30) along a main frame pivot axis (114), said main frame pivot axis being transverse to the longitudinal centerline of said prime mover;

a head shaft (150) operatively rotatably attached to the second end of said sub-frame (112) along a head shaft axis (151), said head shaft axis (151) being transverse to the longitudinal centerline of the prime mover;

an excavating drum (148) being operatively attached to said head shaft (150) for rotation about said head shaft axis (151); and

wherein said head shaft (150) is operatively pivotally attached to the second end of said sub-frame (112) along an axis (124) which is fixed with respect to said main frame pivot axis (114) and which is substantially perpendicular to said main frame pivot axis (114) whereby the position of the head shaft axis (151) can be adjusted with respect to the position of the main frame pivot axis (114) from a position parallel to said main frame pivot axis (114) to positions not parallel to said main frame pivot axis (114).

2. The excavating apparatus of claim 1 wherein said excavating drum is wider than the ground supports.

3. An excavating apparatus having a prime mover having a longitudinal centerline and comprising a main frame (30) with an engine, a ground drive system and an excavation boom operatively attached thereto, said excavation boom comprising:

a sub-frame (112) having a first end and a second end, said first end of said sub-frame (112) being operatively pivotally attached to said main frame (30) along a main frame pivot axis (114), said main frame pivot axis being transverse to the longitudinal centerline of said prime mover;

a head shaft (150) operatively rotatably attached to the second end of said sub-frame (112) along a head shaft axis (151), said head shaft axis (151) being transverse to the longitudinal centerline of the prime mover;

an excavating drum (148) being operatively attached to said head shaft (150) for rotation about said head shaft axis (151); and

wherein said head shaft (150) is operatively pivotally attached to the second end of said sub-frame (112) along an axis (124a of Fig. 6) which is fixed with respect to said main frame pivot axis (114) and which is substantially parallel to an axis (124) perpendicular to said main frame pivot axis (114) whereby the position of the head shaft axis (151) can be adjusted with respect to the position of the main frame pivot axis (114) from a position parallel to said main frame pivot axis (114) to positions not parallel to said main frame pivot axis (114).

4. The excavating apparatus of claim 3 wherein said excavating drum is wider than the ground drive system.

5. An excavation assembly comprising;  
a frame (112) with a first and second end;  
a drive component (52) operatively mounted at the first end;  
a head shaft (150) disposed along an axis and being operatively mounted at the second end;  
a drive sprocket (144) operatively mounted to the drive component (52);  
an excavation drum (148) operatively rotatably mounted onto the head shaft (150) and including excavation members (154) operatively

mounted in a fixed pattern;  
a driven sprocket (146) operatively mounted to the excavation drum (148);  
an excavation chain (142) routed around both the drive sprocket (144) and the driven sprocket (146) for transferring power from drive component (52) to excavation drum (148) and including excavation members (154) mounted in a fixed pattern;  
wherein the excavation drum (148) is mounted onto the head shaft (150) in a manner that the excavation drum (148) cooperates with the excavation chain (142) and the fixed cutter pattern of the excavation chain (142) to stay in consistent alignment with the fixed cutter pattern of the excavation drum (148).

6. The excavating assembly of claim 5 including a first second and third cutters (154) wherein the first cutter is closer to a longitudinal centerline of the frame than the second cutter and the second cutter is closer to a longitudinal centerline of the frame than the third cutter.

7. The excavating assembly of claim 5 wherein said first second and third cutters are in alignment along a substantially straight line.

8. The excavating assembly of claim 5 including fourth, fifth and sixth cutters (154) on the other side of the longitudinal centerline from the first, second and third cutters and wherein the fourth cutter is closer to a longitudinal centerline of the frame than the fifth cutter and the fifth cutter is closer to a longitudinal centerline of the frame than the sixth cutter.

9. The excavating assembly of claim 8 wherein the fourth, fifth and sixth cutters are in alignment along a substantially straight line.

10. The excavating assembly of claim 9 wherein the first and fourth cutters are disposed along a line substantially parallel to the axis of the head shaft (150).

11. The excavating assembly of claim 10 wherein the second and fifth cutters are disposed along a line substantially parallel to the axis of the head shaft (150).

12. The excavating assembly of claim 11 wherein the third and sixth cutters are disposed along a line substantially parallel to the axis of the head shaft (150).

13. The excavating assembly of claim 9 wherein the first and fourth cutters are disposed along a line substantially parallel to the axis of the head shaft (150).

14. The excavating assembly of claim 13 wherein the second and fifth cutters are disposed along a line substantially parallel to the axis of the head shaft (150).

15. The excavating assembly of claim 14 wherein the third and sixth cutters are disposed along a line substantially parallel to the axis of the head shaft (150).

16. The excavating assembly of claim 15 wherein the first second and third cutters are in alignment along a substantially straight line.

17. The excavating assembly of claim 16 wherein an additional set of cutters is disposed along an outer line parallel to an inner line passing through the first second and third cutters.

18. The excavating assembly of claim 17 wherein a further set of cutters is disposed along a second outer line parallel to a second inner line passing through the fourth, fifth and sixth cutters.